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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MASINICK, MICHAEL D	
ART UNIT	**PAPER NUMBER**
2125	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/559,644	FERTIG ET AL.	
	Examiner	Art Unit	
	Michael D. Masinick	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-38 and 42* is/are rejected.

7)☒ Claim(s) *39-41* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. As all previously pending claims have been cancelled and new claims are submitted, all previous rejections are rendered moot and are therefor removed.

2. Applicant has argued as the main reason that the new claims are patentable over the prior art of record "*because the packaging apparatus of the present invention is capable of time synchronization in the "microsecond range," while the applied prior art seeks, at best, to acquire a level of time synchronization in the range of a millisecond, but states that "equipment configuration" might, more likely, yield a level of time synchronization of approximately 50 milliseconds*". This argument is acceptable based on claim amendments.

3. However, there is no argument presented that the Johnson reference as used previously in the USC 102 rejection does not show any of the standard components of the claimed system (central control, sensors, actuators, drive system, etc).

4. Johnson states in section 2.8.1:

The illustrated control system 10 supports time synchronization to the millisecond in each station on the network 46. Where equipment configuration renders this impossible, time synchronization to 50 ms is provided.

This was the state of the art of the technology of Ethernet networks and especially wireless networks when the application of Johnson was filed.

5. A great amount of research was done in the area of wireless sensor network synchronization in the time between the filing of the Johnson patent application and the filing of the current application in the United States (PCT filed June 2004). Applicant is specifically requested to view the publications of Jeremy Elson and Deborah Estrin of the Department of Computer Science at UCLA. Several of these publications are cited by examiner including the Doctoral Dissertation of Mr. Elson (Published June 2003).

6. It is clear from these publications that wireless sensor/actuator networks that are time synchronized in the microsecond range were known and in use in the industry before the application for patent by applicant. See citations in rejection below.

The US Supreme Court recently stated (KSR INTERNATIONAL CO. v. TELEFLEX INC. E AL):

When it first established the requirement of demonstrating a teaching, suggestion, or motivation to combine known elements in order to show that the combination is obvious, the Court of Customs and Patent Appeals captured a helpful insight. See Application of Bergel, 292 F. 2d 955, 956–957 (1961). As is clear from cases such as Adams, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.
Helpful insights, however, need not become rigid and mandatory formulas; and when it is so applied, the TSM test is incompatible with our precedents. The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.
In the years since the Court of Customs and Patent Appeals set forth the essence of the TSM test, the Court of Appeals no doubt has applied the test in accord with these principles in many cases. There is no necessary inconsistency between the idea underlying the TSM test and the Graham analysis. But when a court transforms the general principle into a rigid rule that limits the obviousness inquiry, as the Court of Appeals did here, it errs.

In this case we are faced with the question of would it have been obvious to one of ordinary skill in the art to use a "better" time synchronization system than the 50 millisecond system already present in Johnson. We look no further than the abstract in the article entitled "Time Synchronization for Wireless Sensor Networks*" by Elson et al to find:

Time synchronization is a critical piece of infrastructure for any distributed system. Distributed, wireless sensor networks make extensive use of synchronized time, but often have unique requirements in the scope, lifetime, and precision of the synchronization achieved, as well as the time and energy required to achieve it. Existing time synchronization methods need to be extended to meet these new needs.

Elson goes on to describe recent advances in synchronization where multi-modal schemes can result in synchronization precision in the 1 microsecond range (second column, page 1).

Therefor, the examiner concludes that it is clear that one of ordinary skill in the art would have seen tremendous benefit to using an improved time synchronization technique as described by the Elson documents to improve the 50 millisecond system as noted in Johnson.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 28, 30, 31, 35-38, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,788,980 to Johnson et al in view of "Time Synchronization for Wireless Sensor Networks" and "Time Synchronization in Wireless Sensor Networks" (Dissertation) both by Jeremy Elson.

9. Regarding claims 28 and 42, Johnson shows a packaging apparatus, comprising: a central control unit (Enterprise Server 52); a plurality of sensors (Column 1, line 57); a plurality of actuators (Column 1, line 57); a drive system (Column 2, lines 1-6); means for recording in digital format actual values of said plurality of sensors (Column 8, lines 28-39), actual values of said plurality of actuators and actual values of said drive system; means for determining setpoint values or control commands for said drive system (Column 8, lines 28-39); means for transmission in digital format of said setpoint values of control commands for said drive system between said drive system and said central control unit via a transmission protocol from said

central control unit via said means for data transmission to said plurality of actuators or said drive system (Figures 1 and 2, network); means for data transmission between said plurality of sensors, said plurality of actuators, said drive system and said central control unit of said actual values of said plurality of sensors, said actual values of said plurality of actuators and said actual values of said drive system recorded by said means for recording in digital format, said means for data transmission including wireless transmission means (Column 6, lines 6 and 7) means for evaluating data received by said central control unit from said plurality of sensors (Central control), said plurality of actuators and said drive system; and, means for eliminating errors by use of redundancy in said means for data transmission and said means for transmission in said digital format. Examiner notes that inherently all wireless protocols must contain error correction technology with redundance in order to function as it is inevitable that some data loss will occur in a wireless medium. Teaching references can be provided if requested by applicant.

10. Johnson does not show a transmission protocol for said wireless transmission means operating cyclically with short cycle times and performing a synchronization of said plurality of sensors, said plurality of actuators and said drive system with time-dependent action and further providing said actual values and said setpoint values or control commands for said drive system in each cycle and accuracy of said synchronization in a microsecond range.

11. As noted above in the response to arguments section, the Elson documents show the research done on Time Synchronization in Wireless sensor/actuator networks which provide data at each cycle and the synchronization is in the microsecond range ("capable of precision on the order of 1 microsecond").

12. Based on the analysis presented above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the concepts presented in the Elson documents to improve the time synchronization of Johnson from the 50 millisecond range into the microsecond range (a clear improvement and a benefit easy to see).

1. Referring to claim 30, Johnson shows wherein said short cycle times are in a millisecond pulse (Column 14, line 36).

2. Referring to claim 31, Johnson shows wherein said means for eliminating errors in said means for data transmission and said means for transmission in said digital format includes an HDLC procedure. Examiner notes that HDLC procedures are part of the standard for internet communication. Johnson shows the use of internet communication between computers which inherently uses an HDLC procedure.

3. Referring to claims 35 and 36, Johnson shows wherein said means for data transmission takes place bidirectionally or unidirectionally (Figures 1 and 2. Sensors can be read only and may not receive data).

4. Referring to claim 37, Johnson shows a programming unit connected to said central control unit (Figure 2 – Operators Console).

5. Referring to claim 38, Johnson shows wherein data of slow running processes are only recorded in individual time-spaced cycle pulses, so that only the data of fast running processes are contained in cycle pulses contained in between (Column 14, lines 35-38).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 29, 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,788,980 to Johnson et al al in view of "Time Synchronization for Wireless Sensor Networks" and "Time Synchronization in Wireless Sensor Networks" (Dissertation) both by Jeremy Elson as applied above, and further in view of U.S. Patent No. 6,415,439 to Randell et al.

7. With reference to what was shown above, Johnson/Elson does not show a servo motor controlled by specifying position data at associated points in time done by wireless communication by RF, broadband radio, and infrared.

8. Randell shows a protocol for a wireless control system having a servo motor controlled by specifying position data at associated points in time done by wireless communication by RF, broadband radio, and infrared.

9. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the protocol for wireless control of servo motors as part of the control system of Johnson because it allows for several wireless devices to be controlled simultaneously by a single controller (similar to Johnson), engages in bidirectional communication, is forward compatible and is inexpensive.

Allowable Subject Matter

10. Claims 39-41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael D. Masinick whose telephone number is (571) 272-3746. The examiner can normally be reached on Mon-Fri, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael D Masinick
Primary Examiner
Art Unit 2125

MDM, July 3, 2007

Michael D. Masinick
Primary Examiner
Art Unit 2125